

**PATENT COOPERATION TREATY**

From the INTERNATIONAL SEARCHING AUTHORITY

To:

Amica Law LLC  
30 Raffles Place #18-03-04  
Chevron House 048622  
Singapore

**PCT**

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing (day/month/year)	17 DEC 2009
Applicant's or agent's file reference	FOR FURTHER ACTION See paragraphs 1 and 4 below
WT20091488	
International application No.	International filing date
PCT/SG2009/000384	(day/month/year) 19 October 2009
Applicant	
NATIONAL UNIVERSITY OF SINGAPORE et al.	

1.  The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.  
*Filing of amendments and statement under Article 19:*  
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):
  - When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.
  - Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70
 For more detailed instructions, see the notes on the accompanying sheet.
2.  The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3.  With regard to any protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
  - the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereto to the designated Offices.
  - no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.
4. Reminders
 

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/AU	Authorized officer
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. +61 2 6283 7999	Xin-Lin Goh  AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. +61 2 6283 2323

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article", "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, paragraph 296).

**What parts of the international application may be amended ?**

- Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

**When ?** Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

**Where not to file the amendments ?**

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

**How ?** Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

**What documents must/may accompany the amendments ?**

**Letter (Section 205(b)):**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

#### NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended, or, as the case may be, differences between the claims as previously amended and currently amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed;
- (vi) the claim replaces one or more claims as previously amended;
- (vii) the claim is the result of the division of a claim as previously amended.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims].  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

#### "Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

#### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1bis(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43bis.1(c)).

#### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, National Chapters.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WT20091488	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/SG2009/000384	International filing date (day/month/year) 19 October 2009	(Earliest) Priority Date (day/month/year) 17 October 2008
<p><b>Applicant</b> NATIONAL UNIVERSITY OF SINGAPORE et al.</p>		
<p>This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.</p> <p>This international search report consists of a total of 5 sheets.</p> <p><input type="checkbox"/> It is also accompanied by a copy of each prior art document cited in this report.</p>		
<p>1. Basis of the report</p> <p>a. With regard to the language, the international search was carried out on the basis of:</p> <p><input checked="" type="checkbox"/> The international application in the language in which it was filed.</p> <p><input type="checkbox"/> A translation of the international application into translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)), which is the language of a</p> <p>b. <input type="checkbox"/> This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).</p> <p>c. <input type="checkbox"/> With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.</p> <p>2. <input type="checkbox"/> Certain claims were found unsearchable (See Box No. II).</p> <p>3. <input type="checkbox"/> Unity of invention is lacking (See Box No. III).</p> <p>4. With regard to the title,</p> <p><input checked="" type="checkbox"/> the text is approved as submitted by the applicant.</p> <p><input type="checkbox"/> the text has been established by this Authority to read as follows:</p> <p> </p> <p>5. With regard to the abstract,</p> <p><input type="checkbox"/> the text is approved as submitted by the applicant.</p> <p><input checked="" type="checkbox"/> the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.</p> <p>6. With regard to the drawings,</p> <p>a. the figure of the drawings to be published with the abstract is Figure No. 1B</p> <p><input type="checkbox"/> as suggested by the applicant.</p> <p><input type="checkbox"/> as selected by this Authority, because the applicant failed to suggest a figure.</p> <p><input checked="" type="checkbox"/> as selected by this Authority, because this figure better characterizes the invention.</p> <p>b. <input type="checkbox"/> none of the figures is to be published with the abstract.</p>		

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2009/000384

## Box No. IV Text of the Abstract (Continuation of item 5 of the first sheet)

Bioresorbable scaffolds for bone engineering, such as repair of bone defects, particularly long bone defects, or augmentation of bone length are described. Scaffolds are porous and comprise multiple side channels. In one embodiment, scaffolds are made from layers of micro-filament meshes comprising polycaprolactone (PCL) or a PCL-composite sequentially laid in incremental 60 degrees of rotation to produce a 0/60/120 degree layering pattern, providing for the formation of interconnected pores. The scaffold can comprise a central channel filled, packed or infused with suitable agents such as bioactive agents. Furthermore, the scaffolds are stiff but yet fracture resistant and with sufficient bending, compressive and torsional strength suitable for bone engineering. The slow degradation of the scaffold is sufficient for the 3D matrix to maintain structure integrity and mechanical properties during the remodelling process.

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG2009/000384

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl.	<i>A61F 2/28 (2006.01) A61L 27/58 (2006.01)</i>	
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPDOC, WPI, NPL, IPC: A61L27, A61F2/02, A61K, A61B. Keywords: bone, osteo+, osseous+, cancellous, trabecular, fibula, iliac, +graft+, implant+, reconstruct+, prosthet+, scaffold+, inner, core, central, micro, filament, polymer, layer+, multi_layer, laminate+, composite, mesh+, pore+, porous, outer, wrapt+, cover+, porosity, bio resorbable, resorbable.		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 2005/048885 A1 (NATIONAL UNIVERSITY OF SINGAPORE) 2 June 2005 Abstract, pages 4, 5, 13, 14 and 16, claims 9 and 10 and Figures 2, 3, 6 and 10	1, 5, 7-15 2-4
X	US 6730252 B1 (TEOH et al.) 4 May 2004 Abstract, columns 7, 8, 12, 13, Table 1 and Figures 3A and 3B	1, 5-8, 10, 11, 14-17 2-4
Y	Column 4	
Y.	EP 1410810 B1 (DEPUY MITEK, INC.) 24 January 2007 Paragraphs 0028, 0032, 0074 and 0095	2-4
A	DE 102005018644 A1 (TECHNISCHE UNIVERSITAT DRESDEN) 10 November 2005 See whole document	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C		<input checked="" type="checkbox"/> See patent family annex
Special categories of cited documents:		
* <sup>A</sup>	document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
* <sup>E</sup>	earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
* <sup>L</sup>	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
* <sup>O</sup>	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
* <sup>P</sup>	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 14 December 2009	Date of mailing of the international search report 17 DEC 2009	
Name and mailing address of the ISA/AU <b>AUSTRALIAN PATENT OFFICE</b> PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. +61 2 6283 7999	Authorized officer <b>Xin-Lin Goh</b> AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : +61 2 6283 2323	

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG2009/000384

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1465633 A1 (LIFESCAN, INC.) 13 October 2004 See whole document	
A	EP 0895762 B1 (SCHNEIDER (USA) INC.) 13 February 2008 See whole document	

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SG2009/000384

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member				
WO	2005048885	AU	2004291022	CN	1972644	EP	1691726
		US	2007083268				
US	6730252	NONE					
EP	1410810	AU	2003252882	AU	2003252886	CA	2445356
		CA	2445558	EP	1410811	JP	2004136096
		JP	2004136097	US	2004078077	US	2004078090
DE	102005018644	NONE					
EP	1466633	AU	2004201379	CA	2463443	CN	1568903
		JP	2004305748	US	2004197367	US	2004197375
		US	2008085292				
EP	0895762	CA	2238837	JP	11188109	US	5980564
		US	6652582	US	2004106984		

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX

PATENT COOPERATION TREATY

From the:  
INTERNATIONAL SEARCHING AUTHORITY

To:

Amica Law LLC  
30 Raffles Place #18-03-04  
Chevron House 048622  
Singapore

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference:  
WT20091488

Date of mailing  
(day/month/year)  
**17 DEC 2009**

FOR FURTHER ACTION  
See paragraph 2 below

International application No. <b>PCT/SG2009/000384</b>	International filing date (day/month/year) <b>19 October 2009</b>	Priority date (day/month/year) <b>17 October 2008</b>
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International Patent Classification (IPC) or both national classification and IPC

INT. CL.      **A61F 2/28 (2006.01)**      **A61L 27/58 (2006.01)**

Applicant  
NATIONAL UNIVERSITY OF SINGAPORE et al.

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: <a href="mailto:pct@ipaaustralia.gov.au">pct@ipaaustralia.gov.au</a> Facsimile No. +61 2 6283 7999	Date of completion of this opinion <b>14 December 2009</b>	Authorized Officer <b>XIN-LIN GOH</b> AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. +61 2 6283 2323
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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/SG2009/000384

**Box No. I Basis of this opinion**

1. With regard to the language, this opinion has been established on the basis of:  
 The international application in the language in which it was filed  
 A translation of the international application into, , which is the language of a translation furnished for the purposes of international search (under Rules 12.3(a) and 23.1(b)).
2.  This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
  - a. (means)  
 on paper  
 in electronic form
  - b. (time)  
 in the international application as filed  
 together with the international application in electronic form  
 subsequently to this Authority for the purposes of search
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/SG2009/000384

<b>Box No. V</b>	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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**1. Statement**

Novelty (N)	Claims 2 to 4, 7, 12 to 14	YES
	Claims 1, 5, 6, 8 to 11, 15 to 17	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1 to 17	NO
Industrial applicability (IA)	Claims 1 to 17	YES
	Claims NONE	NO

**2. Citations and explanations:**

The following documents identified in the International Search Report have been considered for the purposes of this report:

D1: WO 2005/048835 A1 (NATIONAL UNIVERSITY OF SINGAPORE) 2 June 2005

D2: US 6730252 B1 (TEOH et al.) 4 May 2004

D3: EP 1410810 B1 (DEPUY MITEK, INC.) 24 January 2007

**NOVELTY (N)**

D1 discloses a bioresorbable scaffold for bone tissue engineering (see abstract) comprising an inner portion (5) and an outer portion (4) (see Figures 2 and 3), wherein the layered scaffold structure (inner and outer portion) is made from bioresorbable polycaprolactone (PCL) by layering PCL filaments with a lay-down pattern of 0/60/120° (see page 16 lines 14-15 and Figures 6) such that each layer of microfilament mesh is positioned on the previous layer at an angle of 60 degrees relative to the microfilament polymer threads in the previous layer (see Figure 10), thereby producing an inner portion (5) having a completely interconnected porous architecture and a porosity of approximately 60% to 70% (see page 14 lines 21-23). A method of preparing a bioresorbable scaffold as defined in claim 10 is considered to be inherently disclosed as the first and second portion (inner and outer portion) are formed from expandable material (see abstract) which comprises bioresorbable polycaprolactone (PCL) (see claim 9) and is prepared by layering PCL filaments layer by layer (see claim 10 and Figures 3 and 10). This citation thus renders claims 1, 5, 8, 10, 11 and 15 not novel.

With regard to claim 9, D1 discloses that the scaffold may have a diameter of the first portion of 15mm (corresponding to a radial thickness of 7.5mm) and the diameter of the second portion of 20mm (corresponding to a radial thickness of 2.5mm) (see page 13 lines 20-22).

D2 discloses a bioresorbable scaffold from bioresorbable polymers such as polycaprolactone (PCL) for bone tissue engineering and method of fabricating (see abstract) whereby the scaffold structure is formed from a plurality of PCL layers based on a 0/60/120° lay-down pattern (see column 8 lines 5-13, lines 50-52, and Figures 3A and 3B), resulting in an interconnected pore network (see column 13 lines 44-48). The outermost layer of the scaffold structure is considered to be the outer portion while the remaining layers are considered to be the inner portion as defined in claim 1. This citation thus renders claims 1, 5, 10 and 11 not novel.

With regard to claims 6, 8, 15 to 17, D2 discloses that the scaffold has a porosity ranging from 30% to 80% (re claims 8 and 15, see Table 1 and column 12 line 11); that the scaffold channel width ranges from 250µm to 780µm (re claim 17, see Table 1); that the compressive stiffness of PCL scaffolds ranged from 4MPa to 77MPa (re claim 6, see column 13 lines 23-25) and channels having a depth and width created by the height of the walls and the horizontal separation of the adjacent pairs of the vertical walls (re claim 16, see column 7 line 66 to column 8 line 4).

....Continued in Supplemental Box I

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International Application No.

PCT/SG2009/000384

**Supplemental Box I**

In case the space in any of the preceding boxes is not sufficient.

Continuation of Box No. V:

Therefore, the subject matter of claims 1, 5, 6, 8 to 11 and 15 to 17 is not new and does not meet the requirements of Article 33(2) of the PCT with regard to novelty.

None of the prior art documents discloses the features of claims 2 to 4, 7 and 12 to 14. Therefore, the subject matter of these claims is new and meets the requirements of Article 33(2) of the PCT with regard to novelty.

**INVENTIVE STEP (IS)**

Claims 1, 5, 6, 8 to 11 and 15 to 17 also lack an inventive step for the reasons given above.

Claims 2 to 4 lack an inventive step when the disclosures of either of documents D1 or D2 are combined with document D3. D1 and D2 each discloses all the features of the bioresorbable scaffold of claim 1 and that the scaffold may further comprise a bioactive agent (re claim 3, D1: see page 5 line 10 and D2: see column 4 lines 59-61) but does not disclose the inner portion to further comprise a central channel (re claim 2) or the type of bioactive agent (re claim 4). D3 discloses a tissue repair implant comprising layers of reinforcing material made from polycaprolactone monofilaments (see paragraphs [0028] and [0032]) whereby the implant can be rolled into a tube-like structure (hence resulting in a central channel as defined in claim 2, see paragraph [0095]). D3 further discloses the inclusion of bioactive agents such as bone morphogenic protein (BMP), cartilage-derived morphogenic protein (CDMP), vascular endothelial cell-derived growth factor (VEGF) etc (re claims 3 and 4, see paragraph [0074]). Because D1, D2 and D3 are all directed towards similar subject matter, it is considered that a person skilled in the art would, in seeking a solution to the problem being addressed, be motivated to combine the disclosures of either of documents D1 or D2 with document D3 to arrive at the claimed invention.

Claims 7 and 14 lack an inventive step in the light of either of documents D1 or D2 when read in combination with common general knowledge of the art. The feature of the scaffold having a compressive modulus of at least, or about 200MPa to at least, or about 500MPa is considered to relate only to an arrangement that is merely a matter of design choice when the general technical knowledge about the state of the art is used and therefore cannot contribute to providing a patentable inventive step.

Claims 12 and 13 lack an inventive step in the light of D1 when read in combination with common general knowledge of the art. D1 discloses layering the PCL filaments using Fused Deposition Modelling (FDM) technology (see page 4 line 25 to page 5 line 2). The feature of layering the PCL filaments by sintering as defined in claims 12 and 13 is considered to reside only in what is merely a choice of one of several obvious known alternatives in the art and which would be available for use by the person skilled in the art. Therefore this is merely an obvious choice which the PSA would arrive at by a routine and non-inventive process.

For the reasons given above, the subject matter of claims 1 to 17 does not meet the requirements of Article 33(3) of the PCT with regard to inventive step.

**INDUSTRIAL APPLICABILITY (IA)**

The invention defined in claims 1 to 17 is considered to meet the requirements of Industrial Applicability under Article 33(4) of the PCT because it can be made by, or used in, industry.